Shaily Desai

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Education

Savitribai Phule Pune University — **Pune, India**

Bachelor's of Engineering (Computer), **GPA - 9.01/10** *(First Class with Distinction)* 2018-2022

Relevant Coursework **-** Engineering Mathematics, Object Oriented Programming, Advanced Data Structures, Machine Learning, Data Analytics, Theory Of Computation, Computer Networks, High Performance Computing

Experience

Research Associate — **Delhi, India**

Laboratory for Computational Social Systems, IIIT-Delhi August 2022 - Present

- **Combating Online Hate Speech**
  - Lead a team of 4 in **Targeted Counterspeech Generation** under Dr. Tanmoy Chakraborty(IIT-Delhi), and Dr. Md. Shad Akhtar(IIIT-Delhi), project is sponsored by **Logically.ai, U.K**.
  - Experimented with previous state-of-the-art models like **DialoGPT, GeDi,** and other Generative Models.
  - Curated a novel **Counterspeech dataset**, and built a two phased Variational Auto-Encoder based model for generation, while also incorporating community-specific information.
  - Currently working on two new threads in the Counterspeech domain: Controlled Generation and Multi-Turn Dialogue systems for counter-narratives.

Publications

- **"*Counterspeeches up my sleeve!* Intent Distribution Learning and Persistent Fusion for Intent-Conditioned Counterspeech Generation"**
  - Proposed QUARC, a two-staged framework for a novel problem: intent-conditioned counterspeech generation, and developed IntentCONAN, the first diversified intent-specific counterspeech dataset.
  - Outperformed prior baselines by an average of +10% across 5 evaluation metrics.
  - **Long paper is under review at The 61st Annual Meeting of the Association for Computational Linguistics(ACL 2023).**
- **"Combining Context-Free and Contextualized Representations for Arabic Sarcasm Detection and Sentiment Identification": Link**
  - Built a hybrid model which incorporated static and contextual word embeddings, and resulted in an enhanced F1-score, outperforming all baselines by 10%.(F1-Sarcasm **0.614**, F-PN Sentiment **0.7073**)
  - Published at WANLP 2021, held in conjunction with the **16th Conference of the European Chapter of the Association for Computational Linguistics (EACL)**.
- **"Leveraging Emotion-Specific features to improve Transformer performance for Emotion Classification"**
  - Built an ensemble model which improved the performance of baseline transformer models on the emotion classification subtask held at WASSA 2022. Outperformed accuracy and Macro F1 scores by 7-8%.
  - The proposed system has been published at the **60th Annual Meeting of the Association of Computer Linguistics (ACL 2022).Link**
- **"Multitask Finetuning for Improving Neural Machine Translation in Indian Languages"**
  - Explored and experimented on various fine-tuning methods for Indian languages in low-resource settings.
  - Built a multi-task transformer model and integrated a Causal Language Modeling objective with the translation task. Increased the BLEU score metric by 10-20% across 3 language pairs. Preprint **Link**
- **Published** a beginner friendly version of the **RSNA Pneumonia Dataset** on Kaggle.

Projects

- **Summer Internship** at Celebal Technologies, Pune:
  - Built an **Optical Character Recognition (OCR)** based text scanner.
  - Tested various models and Computer Vision libraries (PyTesseract, PyImageSearch), and deployed the model in a web-based interface using JavaScript and CSS.

- Model for **Cancer Tumor Segmenter:**
    - Built a **Cancer Tumor Segmenter web application** as part of the final year project. Studied and compared models such as the vanilla U-Net, MSU-Net, E1D3 U-Net and nn-UNet.
    - Trained nn-UNet on the BrATS Dataset on Google Cloud GPU. Technologies used: **PyTorch, Flask, React Js, Firebase, Monai.**
- **Diabetic Retinopathy Grade Classifier:**
    - Explored and analyzed the **Messidor Dataset**, and experimented on various CNN based models to classify Retinopathy Grade and risk of Macular Edema.
    - Applied the Contrast Limited Adaptive Histogram Equalization**(CLAHE)** Algorithms and tested out different permutations of every method(HE and CLAHE combined).
    - Executed a **Graph Convolutional Network** model, and used the Spektral library(based on Keras and Tf2) for model building.
- **Direct Farmer to Consumer E-Commerce Platform:**
    - Built a prototype for a Farmer-to-Consumer platform, where sellers can directly publish their inventories online. Interviewed farmers from the village of "Takliwadi" in Maharashtra to understand main issues.
    - Integrated a "crop classifier" module in the application to bridge the language barrier among vendors and buyers. Underlying model was a hybrid CNN. **Tech Stack: Android Studio, Java, Firebase, Tensorflow.**
- **Metro Ticketing System:**
    - As part of our college level **Smart India Hackathon,** my team built a ticketing system in Android Studio for the new Pune Metro that was inaugurated that year. We placed **1st** among 20+ teams.
    - The approach was a QR-Code ticket which was generated after the user inputs the source and destination, along with a validity timeout.
    - Integrated a UPI interface and a One Time Password(OTP) based login.

Leadership/Volunteer Experience

- **International Conference on Natural Language Processing (ICON 2022)** ***Organizing Team(2022)***
    - Organizer and reviewer for the main track papers at ICON, indexed in ACL.
- **PVG's AI CLUB** ***(Founder : July 2021 - Present)***
    - **~35** member club backed by HOD and an assistant professor**, founded to develop an active research community** at the college, which enhanced the learning environment for second and third year students.
    - **Designed a research track and a learning track** within the club based on the students' objectives, and conducted weekly code walkthroughs and concept sessions with all students.
    - **TEDxPVGCOET** **(*Lead Organizer & Licensee : 2021-22, Editorial Team: 2020-21, Curation Team: 2020-21*)**
    - Was involved in the organization, editorial and curation of two TEDx events
        - **TEDxPVGCOET 2021**, which featured Avant-Garde artists(POC for keynote speaker, and host.)
        - **TEDxKothrud "COUNTDOWN"** event held in conjunction with the local student community of Pune, which aimed to spark a conversation on **Climate Change** and **Environmental issues** faced by the world today.
- **Entrepreneurial Development Cell(EDC)** ***Management Team(2019-20)***
    - Event Management team for PVG's Entrepreneurship cell, and organizer for the annual event "THRUST" which showcased Pune's best entrepreneurs and startup CEOs in a series of talks.

Technical Skills

- Python, C, C++, Java, HTML, XML, CSS, JavaScript
- **Deep Learning Libraries and Frameworks:** Tensorflow, PyTorch, Keras, JAX. **Deployment Tools:** MLflow, Google Cloud Platform, Flask, Docker, Streamlit. **Web Frameworks and Databases:** Django, Flask, SQL, MongoDB